REMARKS

1. The undersigned thanks the examiner Mr. Henry and primary examiner Mr. Ismail for the telephone interview conducted February 22, 2010. The interview focused on the rejections of claims 6 and 20 under 35 U.S.C. 103(a). No agreement was reached on allowability of any claim, but the examiners kindly agreed to consider the claims as amended herein with regard to patentability over the cited art.

2. The office action made the following rejections under 35 U.S.C. 103(a):

- Claims 18-19, 27-28, 31-39 were rejected over "Modality Conversion in Content Adaptation for Universal Multimedia Access" ("MCCA") in view of "Adapting Multimedia Internet Content for Universal Access" ("AMICUA").

- Claims 1-5, 7-17, 20-26, 29-30 were rejected over MCCA in view of AMICUA and further in view of Tso et al. (US 6,421,733 B1).

- Claim 6 was also rejected over MCCA in view of AMICUA and Tso.

3. Claim 6 last paragraph is amended to improve consistency with the terminology used in the rest of the claim and in the specification page 11 last sentence (running to page 12).

Claim 6 is directed to adaptation of a multimedia item to an available resource. The item can be expressed in any one of a number of modalities, e.g. as VIDEO, IMAGE, AUDIO or TEXT in the example of Fig. 2. Given a resource value (e.g. available bandwidth or storage), the modality is chosen to provide the best content value to the user. The problem addressed by claim 6 is how to measure/determine the content value. In the example of Fig. 2, for each of the four modalities, a content value curve is obtained which relates a resource value to a content value for that modality. The four curves are then merged into a single curve of Fig. 3. The diagram of Fig. 3 provides, for each resource value, (i) a corresponding modality providing the best content value, and (ii) the content value for that modality. In particular, the diagram of Fig. 3 can guide a computer in choosing the modality for the resource value.

With reference to the embodiment of Fig. 2, one distinguishing feature of claim 6 is a method for obtaining one of the four content value curves (i.e. the content value curve for a single modality). Given the modality, the corresponding content value curve can be obtained as shown in Figs. 4a-4c, using different measured qualities. Figs. 4a shows a quality curve which relates, for that modality, a resource value to a contents value using the PSNR quality (peak signal to noise ratio). Fig. 4b uses the MOS quality (mean opinion score) to define the contents value. Each of the two quality curves can be obtained using the PSNR or MOS measurements for the particular multimedia item. The two quality curves can be combined to obtain the content value curve of Fig. 4c for that modality. For example, the content value curve of Fig. 4c can be a linear combination of the curves of Figs. 4a, 4b with coefficients selected to provide a realistic contents value. See specification page 12 lines 1-16. For example, the quality curves of Figs. 4a, 4b can be obtained for each multimedia item, and hence the content value curve of Fig. 4c can be obtained on per-item basis.

Claim 6 is not limited to the embodiments discussed herein. However claim 6 last paragraph recites "each of the content value specifications is obtained by combining **quality curves** that are **measured** according to two or more **different qualities**".

The office action page 29 second paragraph asserts that combining the quality curves of claim 6 is taught in AMICUA: "AMICUA, page 20, section 4.1, fig. 3 shows a table where values are obtained with different functional relationships with resource in bits".

AMICUA's Fig. 3 shows a value V that can be computed in a number of ways (using a number of predefined functions) from the resource value (in bytes). The predefined functions are:

V=RUF*Bytes

V=RUF*ln(Bytes)

V=RUF*Sqrt(Bytes)

where RUF is a constant equal to $1/R_i^{max}$ where R_i^{max} is the maximum value of the resource (AMICUA page 21 second paragraph). Since these three functions are predefined

functions, they are not **measured qualities** as recited in claim 6 but rather are predefined mathematical relationships.

4.   **Claim 20**

Claim 20 recites:

> ... a method for selecting a desired modality from a plurality of modalities each of which is adoptable by a multimedia item as an alternative to any other modality ..., the method comprising:
>
> (1)   ... for each said modality, a content value specification ...;
>
> wherein for at least one modality ..., the associated content value specification depends on each of a plurality of quality specifications ..., wherein each quality specification associates each resource value ... with a quality-specific content value for the modality...;

Claim 20 is supported by Figs. 2, 4a-4c as illustrated in the following diagram A:

DIAGRAM A

Multimedia Item

Modalities: (Fig. 2)

VIDEO	IMAGE	AUDIO	TEXT
Content Value Specification (Fig. 4c)	Content Value Specification	Content Value Specification	Content Value Specification

Quality Specification (e.g. PSNR in Fig. 4a)	Quality Specification (e.g. MOS in Fig. 4b)
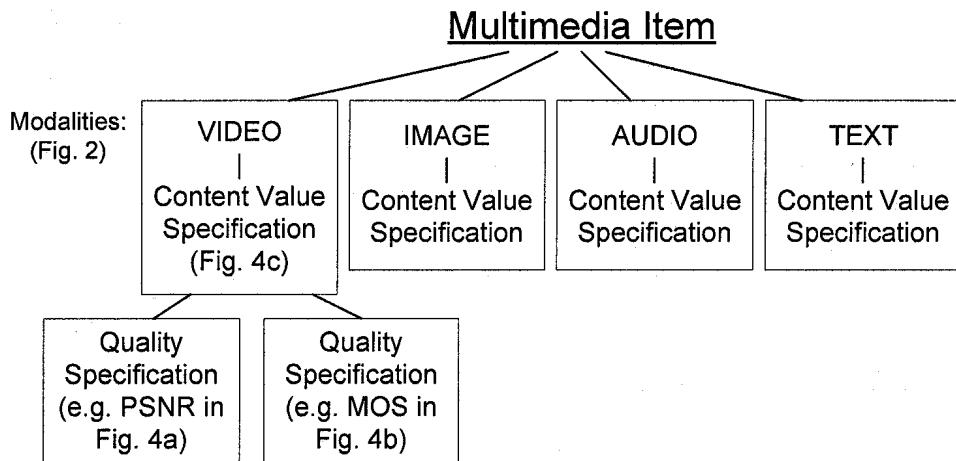
Claim 20 is not limited to the embodiments discussed herein, and in particular is not limited to Diagram A. However, AMICUA Fig. 3 does not teach or suggest dependence on each of a plurality of quality specifications.

Further, claim 20 recites that different quality specifications are associated with a single modality for a single item, and the modality is an alternative that can be selected for that item from a number of modalities.

The office action page 21, last paragraph through page 22, first paragraph states that the applicant's content value specifications are taught by MCCA as follows:

> MCCA, page 435, column 2, lines 35-41, the value of the modality is a sum of different value Ri of the resource constraint.

It is respectfully pointed out that the values Ri do NOT correspond to a <u>single</u> modality of a <u>single</u> item as in claim 20. More particularly, in MCCA, the values Ri and Vi denote, respectively, a resource value and a content value for an item i (page 435, column 2, lines 18-19). Therefore, different values Ri correspond to different items. For each item i, the value Vi is a content value shown in MCCA page 436 right column equation (3) and Fig. 3. For a given item i, Vi corresponds to different modalities adoptable as alternatives by item i. However, in page 435 column 2 lines 35-51, different Ri, Vi correspond to different items i and do not correspond to a single modality of a single item as in claim 20 section (1).

The examiner admits that MCCA does not teach a content value specification depending on each of a plurality of quality specifications, but states at the bottom of office action page 22 that this feature is taught in "AMICUA, page 20, section 4.1, fig. 3 shows a table where values are obtained with different functional relationships with resource in bits". It is respectfully submitted that these functional relationships do not meet claim 20 because they are not combined for a single item as recited in claim 20.

More particularly, AMICUA page 19 first paragraph describes values V_i, R_i for "the ith item". In other words, for different i, these values V_i, R_i correspond to different items. The value V_i is "some function of the resource R_i, i.e. $V_i = f_i(R_i)$" (AMICUA page 19 second paragraph). The table in AMICUA page 20 Fig. 3 provides three examples of functions f_i for the value V_i:

V=RUF*Bytes

V=RUF*ln(Bytes)

V=RUF*Sqrt(Bytes)

where RUF is a constant (AMICUA page 21 second paragraph). Each of these functions can be chosen for an item i, but there is not teaching that different functions can be combined for a **single** item i as recited in claim 20.

5.   Claim 21 depends from claim 20 and additionally recites a scale factor for each quality specification.

The office action page 24 third paragraph states that in "AMICUA, page 12, fig. 2, a modality function based on scale factors is disclosed". Even assuming for the sake of argument that this is correct, AMICUA page 12 fig. 2 does not provide <u>a scale factor for each quality specification</u> as recited in claim 21. More particularly, if we assume for the sake of argument that the quality specifications correspond to the different value functions in AMICUA page 20 fig. 3 as assumed by the examiner, there is no indication that a scale factor of page 12 fig. 2 is provided for each value function in page 20 fig. 3 as recited in claim 21.

<u>Claims 14, 17</u> are believed to be allowable for similar reasons.

6.   Claim 18 recites:

> ... **a multimedia item** which is available in any one of a plurality of alternative modalities ...:
>
> > (1)   **for each said modality**, obtaining a **content value specification** ...;
> >
> > ...
> >
> > wherein at least **one said content value specification is obtained by combining quality specifications associated with respective different qualities** ....

The office action page 4 third paragraph states that the quality specifications are taught by MCCA page 435 column 2 lines 35-41 equation (1) teaching "the value of the modality is depending on capacity, human perception, and resource values". Actually, MCCA equation (1) provides, for each item i, a content value Vi as a function of resource Ri, modality capability M, and user preference Pi. The content value Vi can be built from content value curves VM_{ij} (MCCA page 436 Fig. 2 and equation (3)) each of which

corresponds to a single modality and provides a content value in response to the resource value. Thus, each curve VM_{ij} corresponds to the applicant's content value specification.

However, claim 18 recites that the content value specification is obtained by combining **different quality specifications** each of which **provides a content value for a resource value**. MCCA equation (1) does not teach or suggest that any one or more of Pi or M provide a content value for a resource value. Thus, Pi and M do not correspond to quality specifications of claim 21.

7.   **Claim 31** recites quality curves and scale factors. Claim 31 is believed to be allowable for reasons similar to the reasons given above for claim 21.

In addition, **claim 35** is believed to be allowable for reasons similar to the reasons given above for claim 6.

Claim 36 is believed to be allowable for reasons similar to the reasons given above for claim 21.

In addition, **claim 39** is believed to be allowable for reasons similar to the reasons given above for claim 6.

If a fee is required for this submission, please charge the fee or any underpayment thereof, or credit any overpayment, to deposit account 08-1394.

Any questions regarding this case can be addressed to the undersigned at the telephone number below.

Respectfully submitted,

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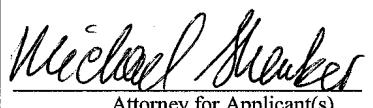
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